Contents

A Tour of Your Textbook viii

Problem Solving xiv

Get Ready for Grade 8

1 Fractions, Metric Units, Estimation 2
2 Convert Fractions, Decimals, and Percents; Perfect Squares and Square Roots 4
3 Patterns With Natural Numbers, Fractions, and Integers 6

CHAPTER 1

Measurement and Number Sense 8

Get Ready 10
1.1 Discover the Pi Relationship 12
1.2 Circumference Relationships 16
1.3 Discover the Area of a Circle 22
1.4 Draw Circles Using a Set of Compasses 26
1.5 Construct Circles From Given Data 30
Use Technology
Construct Circles Using *The Geometer's Sketchpad*® 33
1.6 Choose and Apply Circle Formulas 36
Review 42
Practice Test 44

CHAPTER 2

Two-Dimensional Geometry 46

Get Ready 48
2.1 Discover the Pythagorean Relationship 50
Use Technology
Explore the Pythagorean Relationship Using *The Geometer's Sketchpad*® 56
2.2 Find Approximate Values of Square Roots 58
2.3 Apply the Pythagorean Relationship 62
2.4 Use the Pythagorean Relationship 68
Review 72
Practice Test 74
Task: Design a Playground With a Wading Pool 77

CHAPTER 3

Fraction Operations 78

Get Ready 80
3.1 Add and Subtract Fractions 82
3.2 Investigate Multiplying Fractions 88
3.3 Investigate Dividing Fractions 92
3.4 Order of Operations With Fractions 96
3.5 Operations With Mixed Numbers 100
Review 106
Practice Test 108

CHAPTER 4

Probability 110

Get Ready 112
4.1 Explore Basic Probability 114
4.2 Organize Outcomes and Compare Probabilities 120
4.3 More on Predicted Probabilities 126
4.4 Extension: Simulations 131
4.5 Apply Probability to Real Life 134
Review 138
Practice Test 140
Task: Spin the Spinner; Pick a Card 143
Chapters 1–4 Review 144

Math8_CH00_Front 7/22/04 12:35 PM Page vi

CHAPTER 5

Ratios, Rates, and Percents 146

Get Ready 148
5.1 Apply Ratio and Proportion 150
5.2 Explore Rates 156
5.3 Apply Percent to Sales Taxes and Discounts 162
5.4 Apply Percent to Commission 166
5.5 Calculate Simple Interest 170
Review 174
Practice Test 176

CHAPTER 6

Patterning and Algebra 178

Get Ready 180
6.1 Identify Patterns 182
6.2 Define Patterns Using Algebra 186
6.3 Explore Relationships on a Grid 192
6.4 Apply Patterning Strategies 198
Review 204
Practice Test 206
Task: What's the Best Buy? 209

CHAPTER 7

Exponents 210

Get Ready 212
7.1 Pattern With Powers and Exponents 214
7.2 Order of Operations With Exponents 220
7.3 Discover Scientific Notation 226
7.4 Solve Fermi Problems 232
Review 236
Practice Test 238

CHAPTER 8

Three-Dimensional Geometry and Measurement 240

Get Ready 242
8.1 Recognize and Sketch Three-Dimensional Figures 244
8.2 Build Models of Three-Dimensional Figures 248
8.3 Surface Area of a Triangular Prism 253
8.4 Volume of a Triangular Prism 259
8.5 Surface Area or Volume of Triangular Prisms 264
Review 268
Practice Test 270
Task: Design a Runway 273
Chapters 5–8 Review 274

CHAPTER 9

Data Management: Collection and Display 276

Get Ready 278

9.1 Collect, Organize, and Use Data 280
9.2 Comparative Bar Graphs 286
9.3 Histograms 292
Use Technology
Create Histograms Using Fathom™ 297
9.4 Use Databases to Solve Problems 298
9.5 Use a Spreadsheet to Present Data and Solve Problems 304
Review 310
Practice Test 312

CHAPTER 10

Data Management: Analysis and Interpretation 314

Get Ready 316
10.1 Analyse Data and Make Inferences 318
10.2 Understand and Apply Measures of Central Tendency 324
10.3 Bias in Samples 328
10.4 Make and Evaluate Arguments Based on Data 334
Review 340
Practice Test 342
Task: What Interests You? 345

Math8_CH00_Front 7/22/04 12:36 PM Page vii

CHAPTER 11

Integers 346

Get Ready 348
11.1 Add Integers 350
11.2 Subtract Integers 356
11.3 Multiply Integers 361
11.4 Divide Integers 366
11.5 Order of Operations With Integers 370
11.6 Patterns and Trends With Integers 374
Review 380
Practice Test 382

CHAPTER 12

Patterning and Equations 384

Get Ready 386
12.1 Model and Solve Equations 388
12.2 Apply the Opposite Operations 394
12.3 Model Problems With Equations 400
12.4 Explore Inequalities 405
Review 412
Practice Test 414
Task: Design a Garden 417
Chapters 9–12 Review 418

CHAPTER 13

Geometry of Angle Properties 420

Get Ready 422
13.1 Internal Angles of a Triangle 424
Use Technology
Explore the Internal Angles of a Triangle Using *The Geometer's Sketchpad*® 429
13.2 Angle Properties of Intersecting and Perpendicular Lines 430
Use Technology
Explore Intersecting and Perpendicular Lines Using *The Geometer's Sketchpad*® 435
13.3 Angle Properties of Parallel Lines 436
Use Technology
Explore Parallel Lines Using *The Geometer's Sketchpad*® 441
13.4 Apply Angle Measures 442
13.5 Construct Line Segments and Angles 447
Review 452
Practice Test 454

Answers 456

Glossary 480

Index 488